RYAN LI

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UIUC Civil Engineering student focused on structural engineering, with hands-on experience in computational research, structural drafting, and construction. Interested in applying CAD and engineering analysis skills to the design of buildings, bridges, and steel/concrete structures.

EDUCATION AND CERTIFICATION

University of Illinois Urbana-Champaign | Bachelor of Science, Civil Engineering (Structural Focus) Expected May 2030
Notable Coursework: SE 101 (Revit, Engineering Graphics), CEE 190 (Project-Based CEE)
Prior Coursework: Calculus III, Differential Equations, Linear Algebra, AP Physics C

TECHNICAL SKILLS

CAD/Software: AutoCAD, SketchUp, Revit, Manual Drafting, SAP2000
Programming & Analysis: Python (JAX, JAX-FEM), Microsoft Excel
Certifications: OSHA 10-Hour Construction
Spoken Languages: English, Mandarin, Italian (Limited working proficiency)

RESEARCH & ENGINEERING EXPERIENCE

Undergraduate Researcher | Prof. Jinhui Yan, UIUC Aug 2026 – Present

- Developed a 1D time-dependent convection-diffusion FEM solver in Python from scratch, covering the full pipeline from weak-form derivation and matrix assembly to boundary conditions. Investigated numerical stability at high Peclet numbers to analyze spurious oscillations and implemented a reaction term to model decay/growth.
- Applied JAX and JAX-FEM to GPU-accelerated 3D metal additive manufacturing simulations, modeling laser melt pool CFD and visualizing multi-physics temperature fields using ParaView.

Undergraduate Researcher | Prof. Bassem Andrawes' Research Group, UIUC Sept 2026 – Present

- Prepared concrete beam specimens for Digital Image Correlation (DIC) testing and reviewed literature on shape memory alloys and 3D-printed concrete trusses for structural repair.

Geotechnical Intern | New Jersey Institute of Technology May – Aug 2024

- Performed Standard Proctor compaction, density, and sieve analyses on multiple soil types to evaluate geotechnical properties.
- Analyzed experimental data to author a research abstract on the effects of moisture content and soil gradation on slope stability, which was presented at the NJIT Student Research Symposium.

PROJECT EXPERIENCE

Residential Beam Design – Structural Drawing Set July 2026

- Developed a 23-page AutoCAD drawing set for an 18'-10" beam span, including plans, sections, details, and demolition plans.
- Performed beam sizing calculations in Excel using the Allowable Stress Design (ASD) method for Glulam and steel options.
- Built 3D SketchUp models to visualize framing layouts and connection details for both material alternatives.
- Conducted a cost comparison analysis between Glulam and steel, including materials, labor, and a 20% contingency buffer.

Popsicle Stick Bridge R&D 2021 – 2026

- Calculated theoretical load capacities using physics and linear algebra, then tested bridges to failure.
- Analyzed results and iterated designs to improve truss configuration, force distribution, and material efficiency.

Hands-On Construction Experience 2020 – June 2026

- Built 3 small structures involving concrete foundations, wood framing, and pitched roofs, along with a 10' × 12' paver patio and a drainage dam system. Used SketchUp and manual drafting for layout and framing plans.
- Planned and budgeted additional residential projects, including 14' × 22' ceramic tile flooring and a 12' × 12' chicken run.

LEADERSHIP & EVENTS

UIUC Structural Engineers Association of Illinois (SEAOI) Chapter | Outreach Chair Oct 2026 – Present

- Serve on the executive board to increase younger undergraduate engagement in structural engineering.
- Organizing a 5-part hands-on structural workshop series culminating in a final basswood bridge competition.
- Authored a 30-page rulebook and custom 100-point scoring system for the NJ Garden State Truss (GST) Bridge Competition, then adapted the event into a collegiate workshop series at UIUC while coordinating logistics and securing sponsorships.

2026 NJ Statewide HS Integration Bee Competition | Event Host/Organizer Jun 2025 – Apr 2026

- Founded and hosted a statewide calculus competition with 16 students, 20+ volunteers, and 3 university professors; coordinated logistics, sponsorships, outreach, and 100+ LaTeX-formatted competition problems.